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United States Patent [19]

Bellows

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[54] **STEAM PURITY MONITOR**

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[58] **Field of Search** 324/696, 694, 439, 441; 415/118, 121.3; 416/61; 60/646, 657, 660; 73/23.2, 25.01, 31.03, 25.05, 61.46, 61.47, 61.44, 61.43, 61.76, 61.78, 61.41

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[57] **ABSTRACT**

A steam purity monitor (**10**) detects the presence of sodium hydroxide and sodium chloride in a steam turbine (**12**). In the steam purity monitor (**10**), a control unit (**18**) is connected to a sensor unit (**14**) in the steam turbine (**12**) which has a conductance sensor (**30**), pressure sensor (**34**) and temperature sensor (**32**) to measure conductance, pressure and temperature in the steam turbine (**12**). A heating coil (**40**) is further provided to vary the temperature of the sensor unit (**14**). If conductance is detected by the conductance sensor (**30**), then the temperature is obtained from the temperature sensor (**32**) and compared by the control unit (**18**) to a saturation temperature calculated based on pressure readings from the pressure (**34**). If the temperature exceeds the saturation temperature by a predetermined amount, the control unit (**18**) indicates the presence of sodium hydroxide on a display unit (**29**). However, if the temperature does not exceed the saturation temperature by the predetermined amount, then either sodium hydroxide or sodium chloride could be present. In this case, the steam purity monitor (**10**) is heated by the heating coil (**40**) to a predetermined superheat level at which only sodium hydroxide would exist in a liquid solution. After heating, if conductance is no longer detected by the conductance sensor (**30**), sodium chloride is indicated. If conductance continues to be detected after heating, then sodium hydroxide is indicated.

20 Claims, 5 Drawing Sheets